What is claimed is:

1. A computer-implemented method for determining a detection cluster that is associated with a neurological event of a nervous system disorder of a patient, the detection cluster being associated with at least one detection that exceeds a predetermined threshold of a measure for a first predetermined time duration, the method comprising the steps of:

(a) receiving a set of at least one signal;

(b) determining an onset of the neurological event based on the set of at least one signal;

(c) determining an end of a neurological event based on the set of at least one signal; and

(d) clustering a set of at least one detection between the onset and the end of the neurological event.

2. The method of claim 1, wherein the measure is selected from a group consisting of a ratio of a neurological signal and an amplitude of the neurological signal.

3. The method of claim 1, wherein step (b) comprises the step of:

(i) determining a first neurological signal that is not less than the predetermined threshold of the measure for the first predetermined time duration, wherein the first neurological signal is a member of the set of at least one signal.

4. The method of claim 1, wherein step (c) comprises the step of:

(i) determining that all neurological signals of the set of the at least one signal is less than the predetermined threshold of the measure for a second predetermined time duration.

5. The method of claim 1, further comprising the step of:

(e) determining an occurrence of a detection, wherein the detection is a member of the set of detections.

6. The method of claim 5, wherein step (e) comprises the step of:

(i) if any neurological signal of the set of the at least one signal is not less than the predetermined threshold, recognizing the detection.

7. The method of claim 5, wherein step (e) comprises the step of:

(i) if the first neurological signal is not less than the predetermined threshold, recognizing the detection.

8. The method of claim 1, wherein step (d) comprises the steps of:

(i) determining a time interval between a first detection and a second detection, wherein the first detection and the second detection are adjacent detections; and

(ii) if the time interval is less than a second predetermined duration, clustering the first and second detections.

9. A method for determining a detection cluster that is associated with a neurological event of a nervous system disorder of a patient, the detection cluster being associated with at least one detection that exceeds a predetermined ratio threshold for a first predetermined time duration, the method comprising the steps of:

(a) receiving a set of neurological signals, wherein each neurological signal is associated with a monitoring element; and

(b) if any neurological signal of the set of neurological signals is greater or equal to the predetermined ratio threshold for the first predetermined time duration, associating a corresponding time with a duration of the detection cluster.

10. The method of claim 9, wherein the nervous system disorder is selected from the group consisting of a disorder of a central nervous system, a disorder of a peripheral nervous system, and a mental health disorder, and a psychiatric disorder.

11. The method of claim 10, wherein the nervous system disorder is selected from the group consisting of epilepsy, Parkinson's disease, essential tremor, dystonia, multiple sclerosis (MS), anxiety, a mood disorder, a sleep disorder, obesity, and anorexia.

12. The method of claim 9, wherein the monitoring element is selected from the group consisting of an electrode and a sensor.

13. The method of claim 9, wherein the each neurological signal is selected from the group consisting of an electrical signal, a chemical signal, a biological signal, a temperature signal, a pressure signal, a respiration signal, a heart rate signal, a pH-level signal, and a peripheral nerve signal.

14. The method of claim 9, wherein the medical device system is selected from the group consisting of an external system, a hybrid system, and an implanted system.

15. The method of claim 9, further comprising the steps of:

(c) determining that all neurological signals of the set of neurological signals have a corresponding ratio less than the predetermined ratio threshold at a first instance of time;

(d) determining a second neurological signal having a subsequent ratio that is greater than or equal to the predetermined ratio threshold at a second instance of time; and

(e) if a difference between the first instance of time and the second instance of time is less than a second predetermined time duration, associating a time interval between the first instance of time and the second instance of time with the duration of the detection cluster.

16. The method of claim 9, further comprising the steps of:

(c) determining that all neurological signals of the set of neurological signals have a corresponding ratio less than the predetermined ratio threshold at a first instance of time;

(d) determining a second neurological signal having a subsequent ratio that is greater than or equal to the predetermined ratio threshold at a second instance of time; and

(e) if a difference between the first instance of time and the second instance of time is greater than a second predetermined time duration, disregarding the time interval between the first instance of time and the second instance of time with the duration of the detection cluster.

17. The method of claim 9, wherein a ratio that is associated with the each neurological signal is determined by dividing a short-term value by a long-term value.

18. The method of claim 17, wherein the long-term value is associated with approximately thirty minutes and the short-term value is associated with approximately two seconds.

19. The method of claim 15, further comprising the step of:

(f) utilizing the corresponding ratio and the subsequent ratio to calculate an intensity of the detection cluster.

20. The method of claim 15, further comprising the step of:

(f) trending an occurrence of the detection cluster.

21. The method of claim 20, further comprising the step of:

(g) providing a report in response to step (f).

22. The method of claim 15, wherein an event burden that is associated with the nervous system disorder over a period of time is determined by a detection cluster frequency.

23. The method of claim 15, further comprising the steps of:

(f) determining an associated ratio of a corresponding neurological signal, wherein the corresponding neurological signal is a member of the set of neurological signals;

(g) if the associated ratio exceeds the predetermined ratio threshold, associating the corresponding neurological signal with the electrographic spread of the detection cluster; and

(h) repeating steps (f) and (g) in order to determine a number of neurological signals that are in involved in the neurological event, wherein the number is equal to the electrographic spread of the detection cluster.

24. The method of claim 23, wherein an event burden that is associated with the nervous system disorder over a period of time is determined by a conjoint measure of the cluster intensity, the cluster duration, the electrographic spread, and a number of detection clusters per unit time.

25. The method of claim 24, wherein the event burden is further determined by an indication of a severity of the neurological event as provided by the patient.

26. The method of claim 23 comprising the further steps of:

(i) showing a graphical representation of a brain of the patient; and

(j) distinguishing any monitoring elements that correspond to the neurological signals that are involved in the neurological event in relation to the graphical representation of the brain.

27. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 1.

28. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 9.

29. A method of providing a treatment therapy of a nervous system disorder, the method comprising the steps of:

(a) receiving a set of neurological signals, wherein each neurological signal is associated with a monitoring element;

(b) if any neurological signal of the set of neurological signals is greater or equal to a predetermined ratio threshold for a first predetermined time duration, associating a corresponding time with a start of a detection cluster;

(c) determining that all neurological signals of the set of neurological signals have a corresponding ratio less than the predetermined ratio threshold at a first instance of time;

(d) determining a second neurological signal having a subsequent ratio that is greater than or equal to the predetermined ratio threshold at a second instance of time;

(e) if a difference between the first instance of time and the second instance of time is less than a second predetermined time duration, associating a time interval between the first instance of time and the second instance of time with a duration of the detection cluster; and

(f) delivering the treatment therapy in accordance with the duration of the detection cluster.

30. The method of claim 29, wherein the nervous system disorder is selected from the group consisting of a disorder of a central nervous system, a disorder of a peripheral nervous system, a mental health disorder, and a psychiatric disorder.

31. The method of claim 30, wherein the nervous system disorder is selected from the group consisting of epilepsy, Parkinson's disease, essential tremor, dystonia, multiple sclerosis (MS), anxiety, a mood disorder, a sleep disorder, obesity, and anorexia.

32. The method of claim 29, wherein the treatment therapy is selected from the group consisting of electrical stimulation, magnetic stimulation, drug infusion, and brain temperature control.

33. The method of claim 29, wherein the treatment therapy is provided to a location of a body selected from the group consisting of a brain, a cranial nerve, a vagal nerve, a spinal cord, and a peripheral nerve.

34. The method of claim 29, wherein the monitoring element is selected from the group consisting of an electrode and a sensor.

35. The method of claim 29, wherein the each neurological signal is selected from the group consisting of an electrical signal, a chemical signal, a biological signal, a temperature signal, a pressure signal, a respiration signal, a heart rate signal, a pH-level signal, and a peripheral nerve signal.

36. The method of claim 29, wherein the medical device system is selected from the group consisting of an external system, a hybrid system, and an implanted system.

37. The method of claim 29, further comprising the steps of:

(g) repeating steps (a)- (e) over a period of time in order to determine a number of detection clusters; and

(h) delivering the treatment therapy in accordance with the number of detection clusters.

38. The method of claim 29, further comprising the steps of:

(g) determining an associated ratio of a corresponding neurological signal, wherein the corresponding neurological signal is a member of the set of neurological signals;

(h) if the associated ratio exceeds the predetermined ratio threshold, associating the corresponding neurological signal with the electrographic spread of the detection cluster;

(i) repeating steps (g) and (h) in order to determine a number of neurological signals that are in involved in the neurological event, wherein the number is equal to the electrographic spread of the detection cluster; and

(j) delivering the treatment therapy in accordance with the electrographic spread of the detection cluster.

39. The method of claim 29, further comprising the steps of:

(g) utilizing the corresponding ratio and the subsequent ratio to calculate an intensity of the detection cluster; and

(h) delivering the treatment therapy in accordance with the intensity of the detection cluster.

40. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 29.

41. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 37.

42. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 38.

43. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 39.

44. An apparatus for determining a detection cluster that is associated with a neurological event of a nervous system disorder, the detection cluster being associated with at least one detection that exceeds a predetermined threshold of a measure for a first predetermined time duration, the apparatus comprising in combination:

a configuration of monitoring elements; and

a processor that is coupled to the configuration of monitoring elements, the processor configured to perform the steps of:

(a) receiving a set of at least one signal;

(b) determining an onset of the neurological event based on the set of at least one signal;

(c) determining an end of a neurological event based on the set of at least one signal; and

(d) clustering a set of detections between the onset and the end of the neurological event.

45. The apparatus of claim 44, wherein step (b) comprises the step of:

(i) determining a first neurological signal that is not less than the predetermined threshold of the measure for the first predetermined time duration, wherein the first neurological signal is a member of the set of at least one signal.

46. The apparatus of claim 44, wherein step (c) comprises the step of:

(i) determining that all neurological signals of a set of neurological signals are less than the predetermined threshold for a second predetermined time duration.

47. The apparatus of claim 44, wherein the processor is configured to perform the further step of:

(e) determining an occurrence of a detection, wherein the detection is a member of the set of detections.

48. The apparatus of claim 47, wherein step (e) comprises the step of:

(i) if any neurological signal of the set of at least one signal is not less than the predetermined threshold, associating a corresponding time with the detection.

49. The apparatus of claim 47, wherein step (e) comprises the step of:

(i) if the first neurological signal is not less than the predetermined threshold, associating a corresponding time with the detection.

50. The apparatus of claim of claim 44, wherein step (d) comprises the steps of:

(i) determining a time interval between a first detection and a second detection, wherein the first detection and the second detection are adjacent detections; and

(ii) if the time interval is less than a second predetermined duration, clustering the first and second detections.

51. An apparatus that provides a treatment therapy of a nervous system disorder, the apparatus comprising:

a configuration of monitoring elements;

a delivery module that delivers the treatment therapy to a patient of the nervous system disorder; and

a processor that is coupled to the configuration of monitoring elements, the processor configured to perform the steps of:

(a) receiving a set of neurological signals, wherein each neurological signal is associated with a monitoring element;

(b) if any neurological signal of the set of neurological signals is greater or equal to a predetermined ratio threshold for a first predetermined time duration, associating a corresponding time with a start of a detection cluster;

(c) determining that all neurological signals of the set of neurological signals have a corresponding ratio less than the predetermined ratio threshold at a first instance of time;

(d) determining a second neurological signal having a subsequent ratio that is greater than or equal to the predetermined ratio threshold at a second instance of time;

(e) if a difference between the first instance of time and the second instance of time is less than a second predetermined time duration, associating a time interval between the first instance of time and the second instance of time with a duration of the detection cluster; and

(f) delivering the treatment therapy in accordance with the duration of the detection cluster.

52. The apparatus of claim 51, wherein the processor is configured to perform the further steps of:

(g) repeating steps (a)- (e) over a period of time in order to determine a number of detection clusters; and

(h) instructing the treatment module to deliver the treatment in accordance with the number of detection clusters.

53. The apparatus of claim 51, wherein the processor is configured to perform the further steps of:

(g) determining an associated ratio of a corresponding neurological signal, wherein the corresponding neurological signal is a member of the set of neurological signals;

(h) if the associated ratio exceeds the predetermined ratio threshold, associating the corresponding neurological signal with an electrographic spread of the detection cluster;

(i) repeating steps (g) and (h) in order to determine a number of neurological signals that are in involved in the neurological event, wherein the number is equal to the electrographic spread of the detection cluster; and

(j) instructing the treatment module to deliver the treatment therapy in accordance with the electrographic spread of the detection cluster.

54. The apparatus of claim 51, wherein the processor is configured to perform the further steps of:

(g) utilizing the ratio and the any subsequent ratio to calculate an intensity of the detection cluster; and

(h) instructing the treatment module to deliver the treatment therapy in accordance with the intensity of the detection cluster.

55. The apparatus of claim 51, wherein the delivery module comprises a drug infusion unit.

56. The apparatus of claim 51, wherein the delivery module comprises a stimulation unit that is coupled to a configuration of electrodes in order to generate stimulation pulses in accordance with step (f).

57. A method for updating a therapy parameter that is associated with a treatment therapy by a medical device during a neurological event of a nervous system disorder, the neurological event corresponding to at least one detection cluster, the method comprising:

(a) determining if the neurological event of the nervous system disorder is occurring; and

(b) in response to step (a), adjusting the therapy parameter for each m^{th} successive group of applications of the treatment therapy during a first detected cluster, wherein m is a first positive integer and wherein each group of applications comprises at least one application of the treatment therapy.

58. The method of claim 57, wherein step (b) comprises the step of:

adjusting the therapy parameters from a predefined sets of parameters

59. The method of claim 57, wherein step (b) comprises the step of:

(i) incrementing the therapy parameter by a first incremental amount, wherein the first incremental amount is a positive amount or a non-positive amount.

60. The method of 59, wherein step (b) further comprises the step of:

(ii) limiting the therapy parameter to be less than a first predetermined threshold.

61. The method of claim 59, wherein step (b) further comprises the step of:

(ii) limiting the therapy parameter so that a corresponding current density is less than a pre-specified current density.

62. The method of claim 61, comprising the further step of:

(c) in response to step (ii), shutting down the medical device.

63. The method of claim 61, comprising the further step of:

(c) reconfiguring an electrode configuration that is associated with the treatment therapy.

64. The method of claim 57, wherein step (b) comprises the step of :

(i) modifying the therapy parameter in accordance with a random search technique.

65. The method of claim 57, wherein step (b) comprises the steps of:

(i) monitoring a neurological signal that is indicative of a degree of efficacy corresponding to a current application of the treatment therapy; and

(ii) modifying the therapy parameter for the m^{th} successive group of applications of the treatment therapy in accordance with the degree of efficacy.

66. The method of claim 57, further comprising the step:

(c) adjusting the therapy parameter for each n^{th} successive detection cluster, wherein n is a second positive integer.

67. The method of claim 66, wherein step (c) comprises the step of:

(i) incrementing the therapy parameter by a second incremental amount, wherein the second incremental amount is a positive amount or a non-positive amount.

68. The method of claim 67, wherein step (c) further comprises the step of:

(ii) limiting the therapy parameter to be less than a second predetermined threshold.

69. The method of claim 67, wherein step (c) further comprises the step of:

(ii) limiting the therapy parameter so that a corresponding current density is less than a pre-specified current density.

70. The method of claim 69, comprising the further step of:

(d) in response to step (ii), shutting down the medical device.

71. The method of claim 69, comprising the further step of:

(d) reconfiguring an electrode configuration that is associated with the treatment therapy.

72. The method of claim 66, wherein step (c) comprises the step of:

(i) modifying the therapy parameter in accordance with a random search technique.

73. The method of claim 66, wherein step (c) comprises the steps of:

(i) monitoring a neurological signal that is indicative of a degree of efficacy corresponding to a current application of the treatment therapy; and

(ii) modifying the therapy parameter for the n^{th} successive detection cluster in accordance with the degree of efficacy.

74. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 57.

75. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 63.

76. A computer-readable medium having computer-executable instructions for performing the steps recited in claim 71.

77. A medical device that updates a therapy parameter that is associated with a treatment therapy during a neurological event of a nervous system disorder, the neurological event corresponding to at least one detection cluster, the medical device comprising:

a configuration of monitoring elements;

a delivery module that delivers the treatment therapy to a patient of the nervous system disorder; and

a processor that is coupled to the configuration of monitoring elements, the processor configured to perform the steps of:

(a) determining if the neurological event of the nervous system disorder is occurring; and

(b) in response to step (a), adjusting the therapy parameter for each m^{th} successive group of applications of the treatment therapy during a first detected cluster, wherein m is a first positive integer and wherein each group comprises at least one application.

78. The medical device of claim 77, wherein step (b) comprises the step of:

(i) incrementing the therapy parameter by a first incremental amount, wherein the first incremental amount is a positive amount or a non-positive amount.

79. The medical device of claim 78, wherein step (b) further comprises the step of:

(ii) limiting the therapy parameter to be less than a first predetermined threshold.

80. The medical device of claim 78, wherein step (b) further comprises the step of:

(ii) limiting the therapy parameter so that a corresponding current density is less than a pre-specified current density.

81. The medical device of claim 80, wherein the processor is configured to perform the further step of:

(c) in response to step (ii), shutting down the medical device.

82. The medical device of claim 80, wherein the processor is configured to perform the further step of:

(c) reconfiguring an electrode configuration that is associated with the treatment therapy.

83. The medical device of claim 77, wherein step (b) comprises the step of:

(i) modifying the therapy parameter in accordance with a random search technique.

84. The medical device of claim 77, wherein step (b) comprises the steps of:

(i) monitoring a neurological signal that is indicative of a degree of efficacy corresponding to a current application of the treatment therapy; and

(ii) modifying the therapy parameter for the m^{th} successive group of applications of the treatment therapy in accordance with the degree of efficacy.

85. The medical device of claim 77, wherein the processor is configured to perform the further step of:

(c) automatically adjusting the therapy parameter for each n^{th} successive detection cluster, wherein n is a second positive integer.

86. The medical device of claim 85, wherein step (c) comprises the step of:

(i) incrementing the therapy parameter by a second incremental amount, wherein the second incremental amount is a positive amount or a non-positive amount.

87. The medical device of claim 86, wherein step (c) further comprises the step of:

(ii) limiting the therapy parameter to be less than a first predetermined threshold.

88. The medical device of claim 86, wherein step (c) further comprises the step of:

(ii) limiting the therapy parameter so that a corresponding current density is less than a pre-specified current density.

89. The medical device of claim 88, wherein the processor is configured to perform the further step of:

(d) in response to step (ii), shutting down the medical device.

90. The medical device of claim 88, wherein the processor is configured to perform the further step of:

(d) reconfiguring an electrode configuration that is associated with the treatment therapy.

91. The medical device of claim 85, wherein step (c) comprises the step of:

(i) modifying the therapy parameter in accordance with a random search technique.

92. The medical device of claim 85, wherein step (c) comprises the steps of:

(i) monitoring a neurological signal that is indicative of a degree of efficacy corresponding to a current application of the treatment therapy; and

(ii) modifying the therapy parameter for the n^{th} successive detection cluster in accordance with the degree of efficacy.